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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,270	10/22/2003	Yuichi Shimizu	117243	4556

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EXAMINER

TON, MINH TOAN T

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/690,270	Applicant(s) SHIMIZU ET AL.	
	Examiner Toan Ton	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 18 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 8 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al (US 5966193) in view of Kawata (US 6912020).

Zhang discloses an electro-optical device comprising (see at least Figure 7D and its detailed descriptions): a substrate; data lines 80 extending in a first direction; scanning lines extending in a second direction and intersecting the data lines; pixel electrode 84 and thin film transistor disposed so as to correspond to intersection regions of the data lines and the scanning lines; storage capacitor(s) electrically connected to the thin film transistor and the pixel electrode (capacitor inherently formed between the shielding layer and the pixel electrode, between the data line and the shielding layer); a shielding layer 85 disposed above the data lines and below the pixel electrode.

The limitation not disclosed by Zhang is “titanium nitride included in the shielding layer”. Kawata discloses a display device comprising titanium nitride (see at least col. 6, lines 14-17, lines 26-36) included in the shielding layer for achieving advantages such as more effectively protect the material of the metal layer from oxidation, more effectively suppressing the degradation in the light-shielding performance of the light shielding film during the high-temperature heat treatment. Therefore, it would have been at least obvious to one of ordinary

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skill in the art at the time the invention was made to employ titanium nitride included in the shielding layer for achieving advantages such as more effectively protect the material of the metal layer from oxidation, more effectively suppressing the degradation in the light-shielding performance of the light shielding film during the high-temperature heat treatment.

Zhang appears to disclose the shielding layer is formed along the data line and wider than the data line. Further, it would have been at least obvious to one of ordinary skill in the art at the time the invention was made to employ a shielding layer is formed along the data line and wider than the data line for achieving advantages such as shielding light to the TFT that would result in damaging the TFT.

Zhang discloses interlayer-insulating films (e.g., 79, 82) arranged as bases of the pixel electrodes (see at least Figures 7E).

Aligning all edges of the titanium nitride film with all edges of the shielding layer would achieve advantages such as easing manufacturing process of the display device. It would have at least obvious to one of ordinary skill in the art at the time the invention to align all edges of the titanium nitride film with all edges of the shielding layer for achieving advantages such as easing manufacturing process of the display device.

3. Claims 5-7, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Kawata as applied to claims 1-3, 8 and 22-23 above, and further in view of Murade (US 6885417) and Song et al (US 6781651).

Zhang discloses that the use of relay layer electrically connected to the thin film transistor through the contact hole yields advantages such as increasing the open area ratio, reducing or preventing a punch-through by etching when the contact hole is opened. Song discloses the use

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of buffer/relay layers yields advantages such as providing additional storage capacity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the use of relay layer(s) electrically connected to the thin film transistor such as increasing open area ratio, providing additional storage capacity.

Overlapping the bus (gate/data) line with the pixel electrode in the LCD art is common and known for achieving advantages such as capacitance effect, high aperture ratio. Therefore, it would have been at least obvious to one of ordinary skill in the art to employ the data line so as producing a storage capacitor for advantages such as capacitance effect, high aperture ratio. Further, forming of the same material achieves advantages such as cost-reduction, as a common goal in the art.

It is known and a common goal in the art to minimize manufacturing steps (e.g., forming simultaneously, forming of the same material), thus resulting in advantages such as cost-reduction. Forming the relay layers of the same material as the shielding layer achieves advantages such as cost-reduction, as a common goal in the art. Therefore, it would have been at least obvious to one having ordinary skill in the art to employ the relay layer of the same material as the shielding layer for achieving advantages such as cost-reduction, as a common goal in the art. Further, alternative materials for the shielding layer such as a transparent conductive film are obvious variations (i.e., not patentably distinct) to one of ordinary skill in the art.

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4. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Kawata, Murade and Song, as applied to claims 5-7, 18 and 21, and further in view of Yang (US 5429962) and Ellis (5546204).

Song discloses the data line formed as a double-layered structure (one layer is formed with a material having a lower resistance, the other with a material having a good contact characteristic with other materials) [see at least col. 4, lines 27-31].

Yang discloses an active matrix LCD device comprising a data line formed of polysilicon and metal layer (commonly, e.g., Al, Cr, Mo) for achieving advantages such as minimizing breakage of the data line. Ellis discloses an active matrix LCD device comprising data line constructed of a strip of refractory metal laid on top of a layer of polysilicon for achieving advantages such as achieving low resistance. Therefore, it would have been obvious to one of ordinary skill in the art to employ data line comprising polysilicon and metal layer (e.g., commonly Al, Cr, Mo.) for achieving advantages such as minimizing breakage of the data line, low resistance. Further, forming the relay layer of the same material as the data line achieves advantages such as cost-reduction, as a common goal in the art.

Response to Arguments

5. Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Zhang discloses an electro-optical device comprising (see at least Figure 7D and its detailed descriptions): a substrate; data lines 80 extending in a first direction; scanning lines extending in a second direction and intersecting the data lines; pixel electrode 84 and thin film

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transistor disposed so as to correspond to intersection regions of the data lines and the scanning lines; storage capacitor(s) electrically connected to the thin film transistor and the pixel electrode (capacitor inherently formed between the shielding layer and the pixel electrode, between the data line and the shielding layer).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan Ton whose telephone number is (571) 272-2303.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 9, 2006


TOANTON
PRIMARY EXAMINER